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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/754,498	01/12/2004	Kazuya Oda	0378-0404P	8273

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EXAMINER	
QUIETT, CARRAMAH J	
ART UNIT	**PAPER NUMBER**
2612	

DATE MAILED: 07/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/754,498	ODA ET AL.	
	Examiner	Art Unit	
	Carramah J. Quiett	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 March 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment(s), filed on 03/07/2005, have been entered and made of record. Claims 1-14 are pending.

2. In view of the Applicant's amendment to the Specification, the objection is hereby withdrawn.

Response to Arguments

3. Applicant's arguments filed 03/07/2005 have been fully considered but they are not persuasive.

With respect to the 35 U.S.C. 103(a) rejection over Fossum et al. (U.S.#6,137,100) in view of Nakano et al. (U.S.#6,094,220), the Applicant argues that, "Fossum fails to disclose a method for use with a solid-state image sensor in which each composite pixel includes a main photosensitive cell and an auxiliary photosensitive cell (different in sensitivity) and a corresponding color component filter segment..." The Examiner respectfully disagrees. In col. 2, lines 33-44, Fossum teaches that there are the color component filter segments on each pixel are of different colors (spectral bands) and different areas. Fossum has a large blue area (main photosensitive cell) and at least three smaller areas (auxiliary photosensitive cell), which are green and red. Since the areas and spectral bands are different, the voltage output, V_n, is different, which produces different sensitivities. Please read col. 2, lines 5-44 and 52-59.
As far as the Nakano reference is concerned, Nakano was used to teach a signal processor (fig. 1, ref. 12) and an image extraction unit (fig. 1, ref. 14) for processing the image signal and a

controller (fig. 1, ref. 13) for switching signal processing the signal processor in accordance with components of the lens block and with a result of photometry (col. 2, lines 22-35).

For claims 2-11, the Examiner has not withdrawn the rejection since the rejection for claim 1 still remains rejected using the combination of Fossum and Nakano.

For claims 5 and 12, the Examiner has not withdrawn the rejection since the rejection for claim 1 still remains rejected using the combination of Fossum, Nakano, and Nakata.

For claims 6-7 and 13-14, the Examiner has not withdrawn the rejection since the rejection for claim 1 still remains rejected using the combination of Fossum, Nakano, and Ng. Additionally, the Examiner asserts that Ng teaches a control step as recited in claim 1, which determines shading on the basis of the result of photometry and switches the processing of a signal processing step in accordance with this determination. Please read col. 2, lines 47-67; col. 3, lines 1-11. Similar reasoning applies to dependent claim 13.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. **Claims 1-4 and 8-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fossum et al. (U.S.#6,137,100) in view of Nakano et al. (U.S.#6,094,220).

As for claim 1, Fossum et al. teaches a method of controlling a solid-state image pickup apparatus, comprising: a solid-state image sensor (col. 1, lines 5-7) including a plurality of composite pixels (figs. 1B and 1D) which are arranged in a photosensitive array and each of which includes of a main photosensitive cell (fig. 1B, 110) and an auxiliary photosensitive cell

(fig. 1B, 112-116) different in sensitivity from each other and respectively formed by main photosensitive portion and an auxiliary photosensitive portion, a plurality of color component filter segments respectively positioned in said plurality of composite pixels in a preselected color component filter pattern (col. 5, lines 54-67). His solid-state image apparatus also executes a photometry step of with the electric signal (col. 2, lines 66-67, col. 3, lines 7-21, and col. 4, lines 28-36). Additionally, Fossum's image sensor improves the color image quality by improving the signal-to-noise ratio and changes the effective area of each color pixel, allowing the signal to be boosted through the collection of additional photons (col. 2, lines 1-7). He also mentions the possibility of the system being capable of using separate gain elements for separate spectral band channels (col. 1, lines 65-66.). Also, please read col. 2, lines 5-44 and 52-59.

Although Fossum discloses a means for the signal processing of an image while it is readout from the sensor in order to improve the quality of the image (col. 4, lines 5-36), he does not explicitly teach a solid-state image pickup apparatus, comprising: a preparing step of preparing a solid-state image pickup apparatus configured to process and output an image signal output from a solid-state image sensor that converts an optical image representative of a field and focused on said solid-state image sensor by a lens to the image signal, a plurality of microlenses respectively positioned in said plurality of composite pixels focusing incident light; and a control step of switching signal processing of said signal processing step in accordance with a result of photometry executed said photometry step; in the signal processing step, color difference gain processing for the image signal being switched in accordance with control of said control step to thereby lower a chroma of the image signal.

Examiner takes *Official Notice* regarding the preparing step of preparing a solid-state image pickup apparatus configured to process and output an image signal output from a solid-state image sensor that converts an optical image representative of a field and focused on said solid-state image sensor by a lens to the image signal, and the plurality of microlenses respectively positioned on the plurality of composite pixels focusing incident light. Although Fossum does not teach an image sensor capturing a focused signal by a lens, it is obvious and well known in the art for a solid-state image sensor to do so. It is also well known in the art to place a microlens on a pixel for directing lights to the respective photoelectric conversion elements. In a similar field of endeavor, Nakano et al. has a solid-state image pickup apparatus called an image pickup unit comprising a solid-state image sensor called an image pickup element (fig. 1, ref. 11), which converts light having passed a lens block into an electrical signal (col. 2, lines 19-23). Nakano's lens block performs automatic focus control, automatic iris control, and zoom control on the image signal (col. 2, lines 18-23), where the signal from the image sensor executes photometry (fig. 1, col. 2, lines 12-17). In addition, Nakano discloses a signal processor (fig. 1, ref. 11) and an image extraction unit (fig. 1, ref. 14) for processing the image signal and a controller (fig. 1, ref. 13) for switching signal processing the signal processor in accordance with components of the lens block and with a result of photometry (col. 2, lines 22-35). Lastly, in the image extraction unit, the image signal undergoes color difference gain processing (col. 2, lines 35-40) wherein the image signal is switched in accordance with microcomputer (fig. 1, ref. 131) of the controller. Doing so will lower a chroma of the image signal (col. 4, lines 22-30).

In light of the Official Notice and the teachings of Nakano, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Nakano's image pickup apparatus with Fossum's solid-state image sensor for extracting an object on the standardized color difference plane with high accuracy due to a change of distribution of the object on the standardized color difference plane (Nakano, col. 1, lines 29-33).

As for claim 2, which is dependent on claim 1, the limitation for a control step variably controls the signal processing for the image signal in accordance with a focal distance of the lens has been discussed in the rejection for claim 1 above.

As for claim 3,which is dependent on claim 2, the limitation for a control step variably controls the signal processing for the image signal in accordance with a zoom position of the lens has been discussed in the rejection for claim 1 above.

As for claim 4, which is dependent on claim 1, Fossum teaches a means for the color signal processing of an image while it is readout from the pixels of the sensor in order to improve the quality of the image. However, he does not explicitly disclose a signal-processing step that further includes tonality correction processing for the image signal switched in accordance with the control of the control step. On the other hand, Nakano's image pick up apparatus has a signal processor (fig. 1, ref. 11) and an image extraction unit (fig. 1, ref. 14) for processing the image signal wherein the image extraction unit allows a condition to set under the desired hue and degree of color saturation (col. 4, lines 14-21). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Nakano's image pickup apparatus with Fossum's solid-state image sensor, such as tonality correction. The tonality

correction provides an additional improvement for quality of the color image by controlling the white balance (Nakano, col. 1, lines 48-52).

As for claim 8, it is an apparatus claim corresponding to the method claim 1. Therefore, claim 8 is analyzed and rejected as previously discussed with respect to claim 1.

Claim 9, which is dependent on claim 8, is an apparatus claim corresponding to the method claim 2. Therefore, claim 9 is analyzed and rejected as previously discussed with respect to claim 2.

Claim 10, which is dependent on claim 9, is an apparatus claim corresponding to the method claim 3. Therefore, claim 10 is analyzed and rejected as previously discussed with respect to claim 3.

Claim 11, which is dependent on claim 8, is an apparatus claim corresponding to the method claim 4. Therefore, claim 11 is analyzed and rejected as previously discussed with respect to claim 4.

6. **Claims 5 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fossum et al. (U.S.#6,137,100) in view of Nakano et al. (U.S.#6,094,220) as applied to claims 4 and 11, respectively above, and further in view of Nakata et al. (U.S.#6,747,696).

As for Claim 5, which is dependent on claim 4, Fossum does not disclose a signal-processing step that further requires a gamma table to use is switched in accordance with the control of the control step. Nakano has a signal processor that is switched in accordance with the controller (fig. 1). Fossum's motivation for developing an image sensor is to improve the color image quality by improving the signal to noise ratio. Nakata has a solid-state image apparatus

that is configured to process image signals. This includes a gamma correction table (fig. 7 or fig. 8) switched by a control signal (col. 13, lines 29-43 or col. 14, lines 6-26). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Nakata's invention with Fossum's solid-state image sensor, including a signal processing step with a gamma table switched by a controller. This modification provides a means for carrying out a correcting processing for canceling noise component from image data without deteriorating image quality so as to obtain excellent image data (Nakata, col. 1, lines 66-67 and col. 2, lines 1-3).

Claim 12, which is dependent on claim 11, is an apparatus claim corresponding to the method claim 5. Therefore, claim 12 is analyzed and rejected as previously discussed with respect to claim 5.

7. **Claims 6-7 and 13-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fossum et al. (U.S.#6,137,100) in view of Nakano et al. (U.S.#6,094,220) as applied to claims 1 and 8, respectively above, and further in view of Ng et al. (U.S.#5,699,102).

As for claim 6, Fossum's invention and Nakano's invention are capable of photometry. However, they do not disclose a control step that determines shading on the basis of the result of photometry and switches the processing of said signal processing step in accordance with a result of determination. In figure 1 and 2, Ng has an imaging device with a controller that compensates the shading on the basis of the photometry result along with a gain/filter corrector (col. 2, lines 47-49; col. 3, lines 1-11). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Ng's invention with Fossum's solid-state

image sensor in order to standardize the image signals and thus improve the quality of the image (col. 2, lines 61-67).

Claim 13, which is dependent on claim 8, is an apparatus claim corresponding to the method claim 6. Therefore, claim 13 is analyzed and rejected as previously discussed with respect to claim 6.

As for claim 7, Fossum's invention and Nakano's invention are capable of photometry. However, they do not disclose a photometry step that executes divisional photometry with the field on the basis of the image signal output from the image sensor, and wherein said control step determines shading on the basis of a result of said divisional photometry. As shown in figure 2 of Ng, one can see that Ng's imaging device satisfies the limitations of claim 7(col. 2, lines 61-67). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Ng's invention with Fossum's solid-state image sensor in order to standardize the image signals and thus improve the quality of the image.

Claim 14, which is dependent on claim 13, is an apparatus claim corresponding to the method claim 7. Therefore, claim 14 is analyzed and rejected as previously discussed with respect to claim 7.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carramah J. Quiett whose telephone number is (571) 272-7316. The examiner can normally be reached on 8:00-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (571) 272-7308. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C.J.Q.
July 18, 2005

NGOC-YEN VU
PRIMARY EXAMINER